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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/509,649	03/30/2000	ROBERT ARTHUR LEE	CU-2137TFP	7785

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EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 06/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.		Applicant(s)	
	09/509,649		LEE ET AL.	
	Examiner		Art Unit	
	Audrey Y. Chang		2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 20, 2002 has been entered.

2. This Office Action is also in response to applicant's amendment filed on February 8, 2002, which has been entered as paper number 11.

3. By this amendment, the applicant has amended claims 19, 24, 29-30 and 33-34.

4. Claims 19-36 remain pending in this application.

✓ 5. The rejections to claims under 35 USC 112, first paragraph, set forth in the previous Office Action **still hold**.

6. The rejections to claims under 35 USC 112, second paragraph, set forth in the previous Office Action **still hold**.

7. The objection to the specification set forth in the previous Office Action **still holds**.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 19-36 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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The specification fails to teach adequately as how does a region with “diffuse scattering characteristics” is also capable of appearing to an observer with a “particular shade of gray when viewed from any direction”. The specification also fails to teach adequately that what is consumed to be the “different gray scale region structure types” as recited in claim 19 and what is consumed to be the “micrographic region structure types” recited in claim 26. Claims 20-23, 25-27 and 31-36 inherit the rejection from their respective base claims. Clarifications are required.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. **Claims 19-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

The phrase “too small to be separately resolvable to the human eye” recited in claims 19 and 24 is *descriptive* and *subjective* and it does not give a *definite limitation* to the claims. And the statement is *redundant* to the phrase “being smaller than 0.25 mm in width”. The phrase “a limited number of different gray scale region structure types” recited in claim 19 and the phrase “a limited number of different micrographic region structure types” recited in claim 26 are vague, confusing and indefinite since it is not clear what are these “*structure types*” and it is not clear what exactly does it mean by “a *limited number*”. The phrase “*appearing* by reason of their different diffuse scattering characteristics” recited in claim 19 is descriptive and does not give an objective limitation to the claims. Claims 20-23, 25-29 and 31-36 inherit the rejections from their respective base claim.

The phrase “the same image” recited in claims 22 and 23 is vague and indefinite since it lacks a clear and proper antecedent basis from their respective base claim.

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The phrase “non-diffraction regions” recited in claims 29 and 30 is vague and indefinite since it is not clear how does this phrase or the regions relate to “gray scale regions” stated in their base claims.

The phrase “the observer sees in microscopic form an image” recited in claim 27 is confusing and indefinite since it is not clear what is considered to be “*microscopic image*”. It is not clear what are these *microscopic* images recited in claim 27.

✓ The phrase “the valuable document” recited in claim 34 is vague and indefinite since it lacks proper antecedent basis from its base claim. The phrase “appears when viewed to be continuous with regions on the device that appear when viewed to also be printed thereon” recited in claim 34 simply is confusing, vague and indefinite since it is not clear at all what does it mean. The term “appears to be continuous” seems to be indefinite since it is not clear if it is continuous or not. It is also not clear what is this “that appear when viewed to also be printed thereon” and how does it relate to the regions recited in its base claim. The scope of the claims is really confusing and unclear.

The claims are generally **narrative** and indefinite, failing to conform with current U.S. practice. The applicant is respectfully noted the terms “gray scale regions”, “different gray scale region structure types”, “surface structure”, “micrographic regions”, “diffracting regions”, “non-diffraction regions”, “image” and “regions” used in the various claims are very **confusing**. The claims also include various *descriptive* terms that are *subjective* rather than giving objective limitations to the claims. The applicant is respectfully reminded that the language or description of the claims should be directed to give **definite physical** limitations of the “device” that is sought for patent and should not be drawn to subjective opinions. These deficiencies render the scopes of the claims very unclear and indefinite. **Clarifications are required.**

The claims as stand now contain numerous errors and confusions. The examiner can only point out a few. It is the *applicant's responsibility* to correct all of the discrepancies in the claims to make the claims in comply with the requirements of 35 USC 112, first and second paragraphs.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. **Claim 33 is rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Antes (PN. 5,032,003).**

Antes teaches an optically variable structure pattern having a plurality of regions (19, Figure 2) that each is *embossed* to a *matte structure* such that the matte structures dispersing, due to the scattering, of the incident light (10) *evenly* in all directions. It is implicitly true that the uniform dispersion of the incident light would result a “particular shade of gray”. The embossed matte structure implicitly includes surface relief structure. This reference has therefore anticipated the claim.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. **Claims 19-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Lee (PN. 5,428,479), in view of Lee (PN. 5,825,547).**

Lee (‘479) teaches a *diffraction grating* having *relief grooves structure* wherein the diffraction grating comprises a plurality of pixellated diffraction gratings such that each of the pixellated diffraction

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gratings generates an optically variable image when illuminated. Lee teaches that the pixellated diffraction gratings has a specific gray scale level that is valued between the ranges of 1 to 7 or 1 to 16, when viewed by an observer, (please see the abstract and column 2). The diffraction grating as a whole has a graphic image recorded therein, (please see Figure 2). Lee further teaches that the dimension of the pixellated diffraction grating is on the order of 0.3 millimeter which is smaller than the size that can be resolved by human eye, (please see column 4). This reference discloses all of the limitations of the claims with the exception that it does not teach explicitly that the pixellated diffraction gratings have different diffuse scattering characteristics. However it is known in the art that the diffraction of light by grating into multiple diffraction orders of light rays is considered in the art as an act of diffusing scattering of light in different directions. Also it is inherently true that the zero order diffracted light in general has same intensities when viewed from all directions. Lee ('547) in same field of endeavor further teaches to have the pixellated diffraction gratings separated by a plurality of flat regions (9, Figure 5) that are *embossed* or printed with micro-writing (13) having *graphic characters* for adding additional security feature to the diffractive device. Lee ('547) teaches that the micro-writing is less than 2 *micron*, which is less than the resolution limitation of a human eye, (please see column 8 and Figure 9). It would than have been obvious to one skilled in the art to apply the teachings of Lee ('547) to include *embossed* micro-writings for the benefit of adding additional features to the diffractive grating that may be employed in currency note or other security device. The embossed micro-writing implicitly includes relief structure that will scatter light in all direction.

Since the claims fail to define the meaning of "a limited number of different gray scale region (or micrographic region) structure types" such features therefore cannot be addressed here.

With regard to claim 21, Lee ('479) teaches that the pixellated grating has a dimension of 0.125 mm (or 125 micron) square. But it does not teach explicitly that the size could also be as the claimed

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value. Lee ('547) teaches that the surface pattern of the diffractive device may have a dimension of 30 micron by 30 micron, (please see column 6, lines 63-65).

With regard to claims 22-23, and 25, Lee does not teach explicitly that the individual pixellated diffraction grating comprises an identical or a different image. However such modification is considered to be an obvious matter of *design choice* to one skilled in the art.

With regard to claim 28, Lee ('479) teaches that the diffraction grating having relief grooves structure includes a plurality of pixellated diffraction gratings that each of the pixellated diffraction gratings generates an optical variable image upon illumination of light. Optical variable image means the image varied in response to the viewing direction and position of the observer.

With regard to claims 29 and 30, the Lee ('479) does not teach explicitly to have non-diffraction regions to provide enhancement to the diffraction image. Lee ('547) teaches to include the above-mentioned flat regions with embossed micro-writings wherein these regions are non-diffraction regions.

With regard to claims 34-36, Lee ('479) teaches that the diffraction grating may be adapted for application as security devices for currency notes or credit card. The idea of matching the image presented by the diffraction grating and the currency note or credit card is *an obvious matter of design choice* to one skilled in the art since it involves only routine skill in the art. The manners with respect to the actual inspection of the authentication of the security device having the diffraction gratings, recited in claims 35 and 36, do not differentiate the claimed device from prior art device satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ 2d 1647 (1987).

Response to Arguments

16. Applicant's arguments filed on February 8, 2002 have been fully considered but they are not persuasive. The newly amended claims have been fully considered and they are rejected for the reasons stated above.

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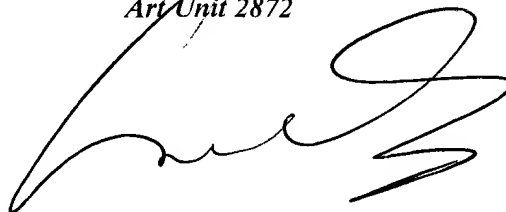
17. In response to applicant's arguments which concern the cited Lee ('479) reference, the examiner wished to respectfully point out to the applicant that the arguments are based on the features that are not in the claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The applicant is respectfully advised to clear up all the confusions and indefiniteness of the claims to make the scopes of claims definite and clear. The features that are not clearly stated in the claims simply cannot be relied upon to overcome the rejections.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Audrey Y. Chang
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.
June 11, 2002